

Response Under 37 CFR 1.116

Expedited Procedure

Examining Group 1700

Application No. 09/763,135

Paper Dated: April 13, 2006

In Reply to USPTO Correspondence of October 13, 2005

Attorney Docket No. 3848-010270

REMARKS

The Office Action of October 13, 2005 has been reviewed and the Examiner's comments carefully considered. The present Amendment cancels claims 1, 2 and 4-22, and adds new claims 23-28, all in accordance with the originally-filed specification. No new matter has been added. Accordingly, claims 23-28 remain in this application, and claims 23, 25, 27 and 28 are in independent form.

In the Office Action, the Examiner has rejected all of the previously-pending claims. In particular, claims 1, 2, 4-6 and 8-22 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In addition, claims 1, 2, 4-6, 8-12, 15 and 16 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner specifically pointed out that the use of the term "consisting" in connection with the method steps of claims 4 and 13, and the use of the term "structural" in claims 1 and 4, are unsupported and/or indefinite. Claims 1, 2 and 4-22 have been cancelled by the foregoing Amendment, and new claims 23-28 do not include these terms in the manner discussed by the Examiner. Accordingly, these rejections have been rendered moot by the claim cancellation.

Claims 1, 2, 4 6, 8-10, 13-15, 17, and 19-22 stand rejected under 35 U.S.C. § 103(a) as being anticipated by U.S. Patent No. 5,167,352 to Robbins in view of U.S. Patent No. 4,695,618 to Mowrer. Further, claims 11, 12 and 18 stand rejected under 35 U.S.C. § 103(a) as being obvious over the Robbins patent and the Mowrer patent, in further view of

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U.S. Patent No. 4,510,019 to Bartelloni. In view of the foregoing amendments and the following remarks, Applicant respectfully requests reconsideration of these rejections.

Summary of the Invention

New independent claim 23 is directed to an underground, partially double-walled reservoir for storing liquid products. This reservoir includes a single-component, rigid, inner, main tank having an outer surface, and at least some specific areas of the outer surface are blasted to enhance the adhesion of a polyurethane to such areas. An impact resistant, electrically insulating, solvent-free polyurethane is directly adhered to the specific blasted areas of the outer surface of the inner tank. Further, a bi-component outer, secondary tank surrounds the non-blasted areas of the outer surface of the inner tank. The secondary tank consists of integrally bonded, indivisible inner and outer layers, and the inner layer is made from an impervious paper material, and the outer layer is made from an impact resistant, electrically insulating, pure, solvent-free polyurethane. The paper material provides the polyurethane with tensile strength, and the polyurethane provides the paper material with cut and shear resistance.

New dependent claim 25 is directed to an underground, partially double-walled reservoir for storing liquid products. The reservoir includes a single-component, rigid, inner, main tank having an outer surface with at least some specific areas thereof blasted. The main tank includes: a pipe for feeding the liquid product to be stored; a pipe for removing the product stored for distribution; a well for use in connection with a buoy or a sensor for detecting the presence of liquid; a check point for use in verifying integrity; and an

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impact resistant, electrically insulating, solvent-free polyurethane adhered to the specific blasted areas of the outer surface of the inner tank. A bi-component, outer secondary tank, surrounds the non-blasted areas of the outer surface of the inner tank, and the secondary tank consisting of integrally bonded, indivisible inner and outer layers. The inner layer consists of an impervious paper material and the outer layer consists of an impact resistant, pure, solvent-free polyurethane having a thickness of at least 2.5 mm. The secondary tank is formed from an electrically insulating, non-metallic material configured to prevent the formation of a galvanic couple.

New independent claim 27 is directed to a method of manufacturing an underground, partially double-walled reservoir for storing liquid products. This method includes the steps of: providing a single-component, rigid, inner, main tank having an outer surface; blasting at least some specific areas of the outer surface of the inner, main tank; applying an impact resistant, electrically insulating, pure, solvent-free polyurethane directly over the blasted areas of the outer surface of the inner, main tank; and surrounding the non-blasted areas of the outer surface of the inner, main tank with a bi-component outer, secondary tank consisting of integrally bonded, indivisible inner and outer layers. The inner layer is made from an impervious paper material and the outer layer is made from an impact resistant, electrically insulating, pure, solvent-free polyurethane. Further, the paper material provides the polyurethane with tensile strength and the polyurethane provides the paper material with cut and shear resistance.

Finally, new independent claim 28 is directed to a method of manufacturing an underground, partially double-walled reservoir for storing liquid products. The method

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includes the steps of: providing a single-component, rigid, inner, main tank having an outer surface; blasting at least some specific areas of the outer surface of the inner, main tank; applying an impact resistant, electrically insulating, pure, solvent-free polyurethane directly over the blasted areas of the outer surface of the inner, main tank; and forming a bi-component, outer, secondary tank covering the non-blasted portions of the outer surface of the inner, main tank, the secondary tank, which consists of integrally bonded, indivisible inner and outer layers. The inner layer is made from an impervious paper material and the outer layer is made from a impact resistant, electrically insulating, pure, solvent-free polyurethane applied by an airless process up to a thickness of at least 2.5 mm. The paper material provides the polyurethane with tensile strength and the polyurethane provides the paper material with cut and shear resistance.

With respect to the blasting process according to the present invention, the following drawings are provided to the Examiner for additional consideration and clarification purposes regarding the methods of manufacturing the reservoir according to the claimed process. In particular, these drawings show the blasted areas of the inner tank, the impervious paper placed over the non-blasted areas of the tank and the polyurethane being applied over the blasted and the non-blasted areas of the tank.

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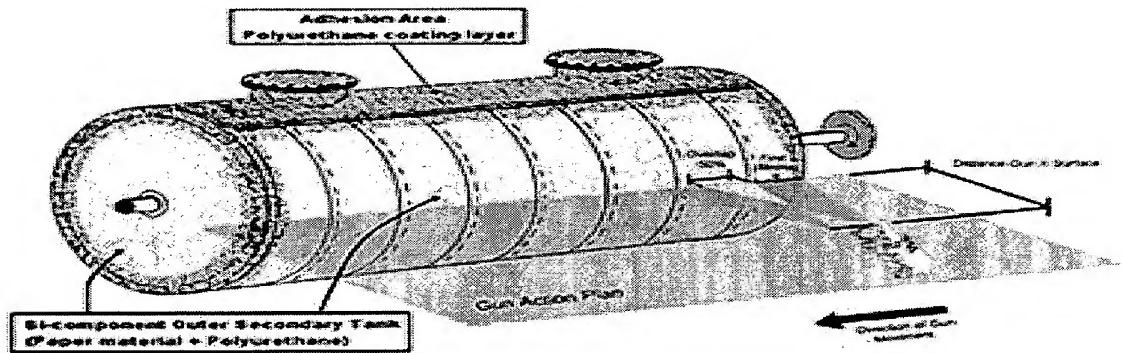
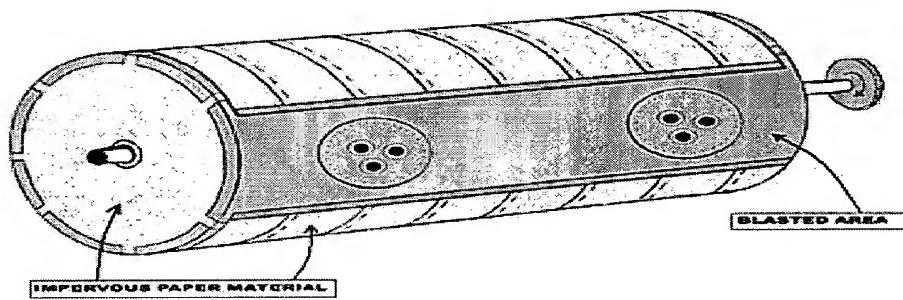
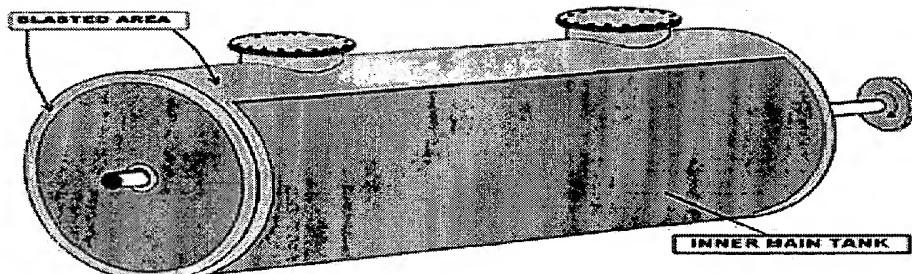
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As the Examiner will note from these above drawings, the polyurethane layer is simultaneously applied over the blasted areas of the tank and over the paper material covering the non-blasted areas.

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The Cited Prior Art

The Robbins patent is directed to a double-walled reservoir having an inner layer made of steel, an intermediate or interstitial barrier layer made from a number of porous materials and an outer layer made of plastic resin. The outer layer or tank of the Robbins patent may or may not be made with a reinforcement material. The Robbins patent discusses an intermediate or interstitial porous barrier layer 18c, which is composed of one-sided corrugated sheet material 74, such as one-sided corrugated cardboard. Monitor sensors 44 may be used to detect the presence of leaks in the tank 10. Element 42 in the Robbins patent is a pipe in which the monitor sensor 44 is lowered to a location proximate the bottom of the interstitial headspace 32. Any material that leaks from the tank and into the intermediate porous layer 18 will not penetrate the gap in the pipe 42, as it is constructed from a metallic or similar material. Instead, the leaked material will flow through the interstitial spaces in the barrier layer 18, and only may reach the location of the monitor sensor 44.

The Mowrer patent is directed to a solventless polyurethane spray composition, as well as a method of applying the polyurethane thereto. In particular, the Mowrer patent discusses a method for preparing and applying polyurethane in a spray application process. The Examiner uses the Mowrer patent for its teachings of polyurethane coatings and application processes that comply with appropriate governmental regulations. The application spraying process allows for higher coating thicknesses with shorter curing times and minimal material requirements.

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The Bartelloni patent is directed to latex-containing papers, and it appears that the Examiner continues to use the Bartelloni patent for its teaching of specialty paper applications. Further, the Examiner continues to use the Mitchell patent for its teaching of the common surface preparation technique of abrasive blasting of the steel.

None of the Prior Art Teaches or Suggests the Novel and Non-Obvious Limitations of the Reservoir and Methods of Claims 23, 25, 27 and 28

Applicant submits that the Robbins patent teaches a double-walled storage tank having an inner, main tank made of steel, an outer, secondary containment tank made of a plastic resin fully and completely surrounding the inner tank, and an intermediate barrier layer made of a number of porous materials (such as a foam material) between the inner and outer tanks. However, the Robbins patent does not describe, teach or suggest adhering parts of the outer tank to parts of the inner tank, without an intermediate barrier layer made of a number of porous materials. Instead, the Robbins patent is focused on an intermediate porous barrier layer positioned around the inner, main tank and how it can better direct any fluid leaking therefrom to the bottom part of the double-walled reservoir, between the inner and the outer tanks.

Applicant further submits that the impact resistant, electrically insulating, pure, solvent-free polyurethane described in the specification and claims of the present application is "structural" in the sense that it forms an impact resistant layer. It should be noted that this previously-used term "structural" is not meant to indicated that the polyurethane is structural in and of itself.

Still further, the prior art of record, including the Robbins patent, teach only

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well-known double-walled tanks where there is a gap or interstice formed between the inner tank and the outer tank to receive a sensor. The present invention includes very specific structural components, as well as manufacturing steps, that result in areas where the polyurethane layer directly adheres to the blasted areas of outer surface of the inner, main tank, which thereby forms an integral portion of the inner, main tank. However, the secondary, outer tank is formed by surrounding non-blasted areas of the outer surface of the inner, main tank with a bi-component outer, secondary tank, which consists of integrally bonded, indivisible inner and outer layers. This bi-component layer is not adhered to the inner, main tank, specifically at the non-blasted areas. Therefore, this structure creates a "partially" double-walled reservoir. The inner layer is made from an impervious paper material, and the outer layer made from an impact resistant, electrically insulating, pure, solvent-free polyurethane. In this manner, voids are created between the inner, main tank and the outer, secondary tank, through which leaked liquids flow by capillary effect to a sensor positioned within the gap. None of the Robbins patent, nor any of the prior art of record, teach or suggest such an innovative structural arrangement and method of manufacturing such a novel partially double-walled, underground reservoir.

Therefore, none of the Robbins patent, the Mowrer patent, the Bartelloni patent, the Mitchell patent nor any of the prior art of record, whether used alone or in combination, teaches or suggests an underground reservoir as taught in independent claims 23 and 25 of the present application, as added and clarified. In addition, none of the Robbins patent, the Mowrer patent, the Bartelloni patent, the Mitchell patent nor any of the prior art of record, whether used alone or in combination, teaches or suggests methods of manufacturing

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and underground reservoir as taught in independent claims 27 and 28 of the present application, as added and clarified. Claims 24 depends directly from and adds further limitations to independent claim 23 and is believed to be allowable for the reasons discussed hereinabove in connection with independent claim 23. Claims 26 depends directly from and adds further limitations to independent claim 25 and is believed to be allowable for the reasons discussed hereinabove in connection with independent claim 25.

For all the foregoing reasons, Applicant believes that new claims 23-28 are patentable over the prior art of record and are in condition for allowance. Reconsideration of the rejections and allowance of claims 23-28 are respectfully requested.

Respectfully submitted,

THE WEBB LAW FIRM

By


Richard L. Byrne
Registration No. 28,498
Attorney for Applicant
700 Koppers Building
436 Seventh Avenue
Pittsburgh, PA 15219-1845
Telephone: (412) 471-3017
Facsimile: (412) 471-4094